

REMARKS

In the Office Action, claims 12 and 13 are rejected under 35 U.S.C. §112, second paragraph; claims 7-9 and 16 are rejected under 35 U.S.C. §102; and claims 12-15 are rejected under 35 U.S.C. §103. Claims 7 and 12 have been amended.

Attached hereto is a marked-up version of the changes made to the and claims by the current amendment. The attached page is captioned **“Version with Markings to Show Changes Made.”** Applicants respectfully submit that the rejections have overcome in view of the amendments and for the reasons set forth below.

In the Office Action, claims 12 and 13 are rejected under 35 U.S.C. §112, second paragraph. The Examiner essentially asserts that the claimed term “viscosity reducing agent” is confusing. In response, applicants have amended this term to recite “viscosity thickening agent” as indicated above. Applicants believe that this adds no new matter as fully supported in the specification and in addition does not have a narrowing effect on the scope of the claimed subject matter. Claim 13 depends from claim 12 and as a matter of law incorporates each of the features of claim 12. Therefore, applicants believe that claims 12 and 13 fully comply with 35 U.S.C. §112.

Accordingly, applicants respectfully request that this rejection be withdrawn.

In the Office Action, pending claims 7-9 and 12-16 are rejected under 35 U.S.C. §102 or 103. The Examiner essentially relies on Japanese patent document No. 9-213337 (“*Koichiro*”) in support of the prior art rejections.

As previously discussed, claim 7 has been amended. Claim 7 is the sole pending independent claim. The remaining pending claims depend from claim 7 and thus incorporate the features of claim 7 as a matter of law.

Independent claim 7 as amended recites a nonaqueous electrolyte secondary battery that includes a positive electrode, a negative electrode and a separator disposed between the positive electrode and the negative electrode to form a laminate structure wherein the laminate structure is wound a number of times around a center portion of the nonaqueous electrolyte secondary battery. The positive electrode includes a first positive electrode layer, a second positive

electrode layer and a positive electrode collector disposed between the first and second positive electrode layers. Likewise, the negative electrode includes a first negative electrode layer and a second negative electrode layer wherein a negative electrode collector is disposed between the first and second negative electrode layers. The negative electrode is composed of the material including a binder and an active material wherein the binder includes a mixture of a fluorine polymer and an aromatic vinyl-conjugate diene polymer and wherein the active material includes a carbonaceous material. The binder includes from about 2 weight percent to about 15 weight percent of the total weight of the negative electrode wherein the mixture ratio of the fluorine polymer to the aromatic vinyl-conjugate diene polymer ranges from about 1 to about 99.

Applicants have uniquely discovered that the specific material makeup in combination with the structural features of the claimed invention can provide a nonaqueous electrolyte secondary battery which is capable of preventing an excessive rise in the temperature even if an unexpected external short circuit occurs during use. Further, the present invention can provide a nonaqueous electrolyte secondary battery that has excellent cycle characteristics even under a heavy load. Moreover, the wound-type structure of the claimed nonaqueous electrolyte secondary battery allows the quantity of active material per unit of content to be increased. In this regard, the energy per unit content of the claimed invention effectively increases without excessive increase in temperature during use.

Applicants believe that the cited art is clearly deficient with respect to a number of the specific material makeup and structural features of the claimed invention as discussed above. For example, nowhere does the cited art, even if combinable, disclose or suggest a nonaqueous electrolyte secondary battery that includes a negative electrode, positive electrode and a separator disposed between the positive electrode and negative electrode thus forming a laminate structure which is wound a number of times around a center portion of the battery and wherein the negative electrode includes specific material components, such as a binder and an active material, as required by the claimed invention. As previously discussed, the claimed invention can provide a nonaqueous electrolyte secondary battery that displays an increased energy per unit content without excessive increases in temperature during use, even with an unexpected external short circuit. Therefore, applicants respectfully submit that the cited art, even if combinable, fails to disclose or suggest a number of features of the claimed invention.

Accordingly, applicants respectfully request that the anticipation and obviousness rejections with respect to the claimed invention be withdrawn.

For the foregoing reasons, applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of the claims.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

7. (Three Times Amended) A nonaqueous electrolyte secondary battery comprising:
a positive electrode comprising a first positive electrode layer, a second positive electrode layer and a positive electrode collector disposed between the first positive electrode layer and the second positive electrode layer [and];
a negative electrode comprising a binder and an active material, the binder comprising a mixture of a fluorine polymer and an aromatic vinyl-conjugate diene polymer, the active material comprising a carbonaceous material wherein the binder comprises a weight mixture ratio of the fluorine polymer to the aromatic vinyl-conjugate diene polymer that ranges from about 1 to about 99 and wherein the binder comprises from about 2 weight percent to about 15 weight percent of a total weight of the negative electrode, and wherein the negative electrode comprises a first negative electrode layer, a second negative electrode layer and a negative electrode collector disposed between the first negative electrode layer and the second negative electrode layer; and
a separator disposed between the positive electrode and the negative electrode so as to form a laminate structure wherein the laminate structure is wound a plurality of times around a center portion of the nonaqueous secondary electrolyte battery
12. (Amended) The nonaqueous electrolyte secondary battery of Claim 7 wherein the binder comprises a cellulose derivative as a viscosity [reducing] thickening agent.